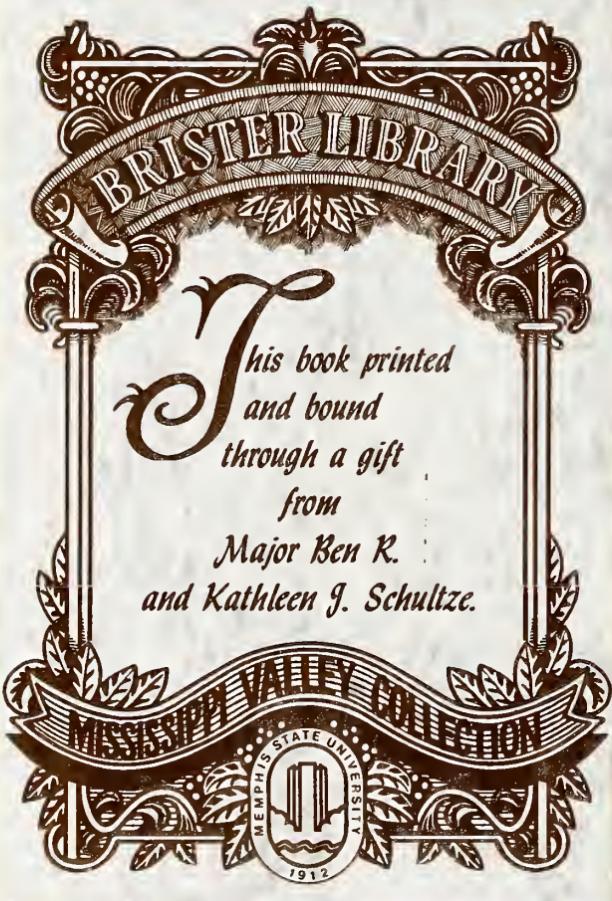


ORAL HISTORY OF THE TENNESSEE VALLEY AUTHORITY  
INTERVIEWS WITH  
HENDON R. JOHNSTON

BY - CHARLES W. CRAWFORD  
TRANSCRIBER - SHARON C. HESSE  
ORAL HISTORY RESEARCH OFFICE  
MEMPHIS STATE UNIVERSITY



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INTERVIEWS WITH HENDON R. JOHNSTON

FEBRUARY 8, 1972

BY CHARLES W. CRAWFORD

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ORAL HISTORY RESEARCH OFFICE

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PLACE: Knoxville, Tenn.


DATE: Feb. 8, 1972

Hendon R. Johnston  
(Interviewee)

Hendon R. Johnston

Charles W. Crawford

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THIS IS THE ORAL HISTORY RESEARCH OFFICE OF MEMPHIS STATE UNIVERSITY. THIS PROJECT IS "AN ORAL HISTORY OF THE TENNESSEE VALLEY AUTHORITY." THE PLACE IS KNOXVILLE, TENNESSEE. THE DATE IS FEBRUARY 8, 1972, AND THE INTERVIEW IS WITH MR. HENDON R. JOHNSTON, FORMERLY WITH THE TENNESSEE VALLEY AUTHORITY, NOW RETIRED. THE INTERVIEW IS BY DR. CHARLES W. CRAWFORD, DIRECTOR OF THE MEMPHIS STATE UNIVERSITY ORAL HISTORY RESEARCH OFFICE, AND WAS TRANSCRIBED BY MRS. SHARON C. HESSE.

CRAWFORD: Mr. Johnston, I suggest that we start the interview by getting some biographical background information about you, and we might start with where and when you were born and get some information about your family, your childhood, your education, your early experience up until the time you joined TVA; then we'll proceed into that subject.

JOHNSTON: Okay sir, my name is Hendon R. Johnston. I was born in Putnam County, Tennessee in the small village of Silver Point. My father was in the lumber manufacturing business, and I had two sisters and one younger brother. As my father moved around in the area, when my older sister and I were of school age, we settled in Cookeville, Tennessee where I went through the grammar grades and high school and attended Tennessee Polytechnic Institute for two years, that being a



junior college at that time.

CRAWFORD: What years was this, Mr. Johnston? Do you remember?

JOHNSTON: Actually, my high school years were 1920 to 1924.

The two years of college were the years of '24 and '25 and then '26 and '27, having skipped a year during which I worked primarily for the Corps of Engineers.

CRAWFORD: After leaving Tennessee Tech at Cookeville in 1927, I believe it was?

JOHNSTON: I went back to work for the Corps of Engineers, working in the field survey organization on the original Tennessee River survey--what is known as the 308 Survey; it's by the Corps.

CRAWFORD: In what years were those surveys completed?

JOHNSTON: They were completed approximately in 1928. It's hard to tell exactly when it was, but it was approximately 1928, and at the end of 1927--December 1--incidentally, we were all furloughed from the Corps; that is, the field people were all furloughed and I obtained employment with the Tennessee Highway Department in the plans department in Nashville, Tennessee where I worked until May 1, 1928, at



which time I returned to the Corps of Engineers in the Nashville district and worked on the Cumberland River from May 1, 1928 to September 30, 1928, at which time I was again furloughed. And in October, 1928 I went to Kansas City where I worked with the Corps of Engineers on the Missouri River. Here I was doing primarily surveys for navigation construction, dredges, dikes, revetments, so forth. I left there in September, 1929 and came to the University of Tennessee where I spent the year 1929 and '30. The summer of '30 I went to Kansas City, again with the Corps of Engineers, worked until approximately October 1, when I returned to the University of Tennessee at Knoxville for the fall quarter of that year. At the end of that quarter, being the end of 1930, I left school, that being during the depression when money was scarce, and returned to the Chattanooga office of the Corps of Engineers where I worked until January 1, 1931. I again returned to the University of Tennessee, Knoxville and completed my academic work for the Bachelor's Degree in Civil Engineering in March, 1932. Again I returned to the Corps of Engineers, working with them on dam site surveys, both topographic and subsurface studies, until August 1, 1933, at which time I was transferred to the Tennessee Valley Authority. Can we have a break here?

I was born November 8, 1906.

In coming to TVA, as I have said, on August 1, 1933, I was assigned to the survey group temporarily with headquarters in LaFollette, Tennessee. After a few weeks I was selected to



do some preliminary work at Norris Dam site, previously Cove Creek, with the Corps of Engineers, and approximately August 15 we employed some laborers and drillers and started some tunnels and shafts for detailed exploration of the Norris Dam site. This carried through until approximately October 1, 1933 when the Norris project was started in earnest. People were brought in from all over the United States--the superintendent coming from California, the project engineer from Ohio, I guess, and various people from throughout the country, and work got under way in earnest. People were employed at a rather rapid rate, and the work got under way expeditiously.

My duties after the first few weeks in the organization, during which time I did work as sort of a coordinator for the construction superintendent; then I became the Cost Engineer for the Norris construction project, which position I held until May 1, 1935 when I was transferred to the general engineering and geology division where I supervised the exploration of dam sites on the main river--the Tennessee River, that is. About July, 1939 I transferred back to the division of construction and started the navigation channel dredging program on the Tennessee River. The first project started was Pickwick; the second, Guntersville; the third, Wheeler, and so on until this work was completed in 1949, having dredged the navigable channel downstream from all the nine main river dams on the Tennessee River.

In May, 1949 I was transferred from this river channel improvement branch to the Johnsonville Steam Plant construction



branch as superintendent. The Johnsonville plant was the first of the large steam plant construction operations undertaken by the Authority.

CRAWFORD: What year was that, sir?

JOHNSTON: May, 1949--May 14, 1949 to be exact. I served as Superintendent at Johnsonville until January, 1951, at which time I was promoted to Project Manager at this same Johnsonville plant and stayed there through the completion of the first six Johnsonville units. In April, 1953 I was transferred to the John Sevier Steam Plant at Rogersville, Tennessee, going there as Project Manager, where we built and commissioned four steam electric generating units of 200 megawatts capacity each. In late February, 1958 I moved from this John Sevier Steam Plant to Widow's Creek Steam plant and began the construction of the unit seven, 500 megawatt unit, at that station. I remained there until February, 1961, at which time I was transferred to Knoxville as Assistant Chief Construction Engineer and succeeded to the chief construction engineer position upon the retirement of Mr. Henry T. Lofft at the end of April, 1961. I remained in that position--that is, Chief Construction Engineer, which title was subsequently changed to Director of Construction in 1963--and I remained there until the end of 1965, at which time I retired from TVA.

CRAWFORD: I'd like to go back over this and ask a few questions



about these different things you did, Mr.

Johnston. For one thing, go back to your early experience with the Tennessee Highway Department, Did you meet people then that you knew later in TVA? Did you meet Neil Bass? Did you meet other engineers that you knew later with the Authority?

JOHNSTON: Yes, I did. I recall meeting Mr. Bass and John Neely and a few other people whom I have known as engineers since.

CRAWFORD: That, of course, was the time you had a great deal of construction going on the Tennessee Highway System, I know, in the 1920's.

JOHNSTON: Right. I was in the plans department, and I worked on plans for the highways in several counties in the state of Tennessee.

CRAWFORD: What about your experience with the Corps of Engineers on the Tennessee River? I believe you took part in the planning work for dams. Where were you headquartered then?

JOHNSTON: Chattanooga. Of course, I was in the field and lived for short periods in various towns up and down the river. I have spent time in most every town on the Tennessee River, particularly from Waverly, Tennessee or Camden, Tennessee to the head of the river.



CRAWFORD: How many of you were working in that project?

JOHNSTON: Well there were engineering personnel virtually; of course, many of them were axe men and rodmen and chainmen and so forth with little, if any, technical education. Peak employment in my section was approximately 260 men.

CRAWFORD: In the plans that you prepared working for the Corps, did you have two different sets of plans for two different types of dams?

JOHNSTON: Yes, we did. In fact, we had at least three sets of plans. One was a thirty-two dam scheme, which would have been a series of very low locks and dams to make the Tennessee River navigable only, with no thought to power production or flood control. The next one was a fourteen dam scheme, which would have made the river navigable and produce a minimum amount of flood control and perhaps power installations at only a very few of these. The third one, and the one subsequently adopted, was the nine scheme, two of which had already been built--those at Hales Bar and at Wilson or Muscle Shoals--which would require the construction of seven additional dams.

CRAWFORD: Why did the Corps prepare three of the different plans? Were they not sure of what Congress would want?



JOHNSTON: That's right, they were not sure, and they at times were not sure which they would actually recommend to the Congress.

CRAWFORD: What sort of work did you do in your work for the Corps on the Missouri River?

JOHNSTON: My work there principally was surveys for dredging operations for hydraulic dredging and channel construction and improvements. A part of my work for the Corps in Kansas City was just on surveys of the upper Missouri River system in Montana and Wyoming just mapping for proposed construction projects.

CRAWFORD: That's certainly way up the Missouri River system. Were you thinking in terms of dams there?

JOHNSTON: Yes, I'm not sure that any of the projects I worked on ever were authorized or constructed, but I did work on several proposed reservoirs.

CRAWFORD: Were you at the sites, or did you do this from maps?

JOHNSTON: Oh, we were on the ground--did it with survey instruments. There were no detail maps of these areas at the time.



CRAWFORD: You did a good deal of travel, then, in that project, didn't you?

JOHNSTON: Yes, I did. I traveled the length of the Missouri River, which I believe is 2,540 miles long; worked on the Yellowstone and several other tributaries of the Missouri.

CRAWFORD: You were getting a great deal of experience early in life. When you went back to study engineering at the University of Tennessee, in what part of engineering did you decide to specialize?

JOHNSTON: Civil engineering. It was in line with the work that I had been doing in the field.

CRAWFORD: Were you acquainted with people at U. T. when you went there?

JOHNSTON: Not prior to my going there. Oh, I had a few personal friends from my home town who were there, but I knew very few people. I have since known many people who were students and faculty. I have some very dear friends, one of whom is Dean Emeritus Dougherty, Nathan W. Dougherty of the University of Tennessee.

CRAWFORD: What did you do when you were working for the Corps on the Cumberland?



JOHNSTON: Actually, I was running levels for their original overall survey of the Cumberland River. This was a level line for vertical control for mapping of the Cumberland and its tributaries.

CRAWFORD: And when you went with the Corps for work on the Cove Creek project, were you working for Chattanooga at that time?

JOHNSTON: Right, yes.

CRAWFORD: Did you spend the time, though, in the Norris area?

JOHNSTON: Yes, I did. I first went to Clinton, Tennessee and spent most of the time from April 1 to December, 1933 in the Clinton area. In December I moved into one of the first dormitories completed in the town of Norris, at which time I was with TVA of course.

CRAWFORD: So your work at the Cove Creek Project went on with little interruption, didn't it, when the change took place?

JOHNSTON: Right. Yes, as I have said, we each received a letter and actually those letters were delivered to us at LaFollette, Tennessee about eleven o'clock on the night of July 31. Until that time we didn't know whether we had a job



beginning at twelve midnight or not. Fortunately, as I said, 190 of us did take jobs and just went right out to work the next morning as if nothing had happened.

CRAWFORD: I suppose that was a very welcome mail delivery.

JOHNSTON: Indeed it was. If you recall, 1933 was in the midst of the Great Depression and people were fortunate to have jobs at all.

CRAWFORD: In what condition was the Cove Creek Project at that time--how well developed? What work was going on?

JOHNSTON: At the time we were transferred to TVA we were in the process of making a railroad survey to take a construction railroad into the Cove Creek site. We were doing some wash borings to determine the elevation of rock throughout the immediate site area, and we were doing land surveys within the reservoir. Most of the people--this 260 that we speak of--were actually doing property surveys running out land boundaries within the proposed reservoir.

CRAWFORD: You were anticipating a dam site?

JOHNSTON: Oh, yes. The Corps of Engineers had the Cove Creek site in mind as early as the early twenties. Some work was done there; I believe a site survey at least was



made in 1923 or 1924. They did core drilling for further subsurface investigation there in 1927 and actually had the site pretty well developed prior to the transfer over to TVA.

CRAWFORD: Had you started any land clearing? Were they removing any timber at the time TVA took over?

JOHNSTON: No, no clearing had started.

CRAWFORD: But I believe plans for the dam had already been drawn up, hadn't they?

JOHNSTON: Yes, preliminary plans at least had been drawn up. Of course, they were subsequently changed considerably by TVA. The project looks considerably different than that envisioned by the Corps.

CRAWFORD: How did TVA change it? What change did they make?

JOHNSTON: Well, the Corps with their latest study had a spillway coming off the hill in a curved figuration coming off the east abutment area of the dam with no spillway at all in the cleared channel area. They also had a barge lift. This barge lift would have raised barges from the low elevation to the upper lake, and this barge lift and the proposed powerhouse would have occupied practically all the area in the actual river channel. I believe also the Corps' maximum full-pool



elevation was 1060, so TVA actually dropped the pool approximately twenty-six feet.

CRAWFORD: Do you know why that change was made?

JOHNSTON: Well, it was done for economic reasons, I believe.

The TVA just did not see economic justification for the higher pool. It would have disrupted many other utilities, and considerably more land would have been required.

CRAWFORD: As it was, I know there was a big relocation program.

You had quite a few families which had to be moved, with the TVA plan even. When did TVA start land clearing, and when did the construction of the dam itself start?

JOHNSTON: Construction started in October, 1933. The land clearing operations, other than that for the construction area itself, started approximately January 1, 1934. I'm not sure exactly when they started, but it was in that period.

CRAWFORD: And when was it that you moved into the Norris dormitory?

JOHNSTON: It was perhaps early January, 1934.

CRAWFORD: That was some very fast construction, wasn't it, to have that ready for you at that time?



JOHNSTON: It was indeed. There were approximately five dormitories for male employees and one for female employees, and a huge cafeteria, community building and other various facilities were constructed on a crash basis during the fall of 1933.

CRAWFORD: How many people do you suppose were working on that project by the end of the year 1933?

JOHNSTON: I would guess 800 people on the dam and another 3000 on the town. Many of those employed at the town-site were W.P.A. workmen.

CRAWFORD: What sort of access did you have? Was the Norris Freeway started?

JOHNSTON: Norris Freeway was started in, I would say, November, 1933, and if I'm not mistaken, it was completed in January, 1934. I'm speaking of only that portion of it between the dam site and Cove Creek, Tennessee--now Lake City--and this end was pushed to enable TVA to receive rail-shipments of materials and transport them over this road from the railway at Cove Creek into the dam site. The freeway extending from Norris Dam toward Knoxville was started, I believe, late in 1933 or perhaps early 1934 and was completed by midyear 1934, roughly.



CRAWFORD: Did you bring most of your construction material in by rail?

JOHNSTON: Yes and transported it from Cove Creek to the project with our own facilities, trucks, trailers, so forth.

CRAWFORD: Did you go into Knoxville often at that time, or did you work altogether at the scene?

JOHNSTON: I worked on the site almost entirely, and I had occasion to come to Knoxville for interviews and conferences at perhaps rather frequent intervals.

CRAWFORD: Did you have frequent inspection by people from the Knoxville office?

JOHNSTON: Yes, we did. There were people there most every day from some division of the Authority.

CRAWFORD: At that time did Carl Bock hold a position as Chief Engineer?

JOHNSTON: Yes, he did. His title, I guess, was not Chief Engineer. Dr. A. E. Morgan was not only Chairman of the Board, but he was also Chief Engineer. Mr. Bock's title was perhaps Assistant Chief Engineer.



CRAWFORD: Did you meet them at this time? Did they inspect the dam often?

JOHNSTON: Yes, they did. I had met both of them on their early visits to the valley, perhaps in June 1933.

CRAWFORD: I suppose you had all the engineering assistance you needed. It was not difficult to recruit people then, was it?

JOHNSTON: No, indeed. The Authority was able to bring some wonderful people in. In fact, they brought them from all over the United States from the best engineering and construction companies; that is, people who had backgrounds with the better engineering and construction firms all over.

CRAWFORD: You met many different people at this project, I'm sure.

JOHNSTON: I did, indeed. I met people from all over the United States, from Mrs. Roosevelt down, and many people from foreign countries. We had many people visit us from foreign countries. Since I had actually been the first person more or less permanently assigned to the Norris construction project, one of my duties was to entertain and receive visitors. The Knoxville people would often call me and say that so and so was coming to the site and would I please show them around. I



remember well escorting such people as Sam Rayburn and many others perhaps of less stature.

CRAWFORD: Who were the most interesting people you ever showed around Norris Dam?

JOHNSTON: Well, I guess perhaps Mr. Rayburn. Mr. Sam Rayburn was one of the more interesting. I also recall a young Spanish engineer who was not only an engineer but apparently was an officer in his government, and knowing no Spanish and him knowing little English, we had quite a time, but I did spend several hours with him, and it certainly was an interesting experience for me. And I hope he got something from it at least. I remember also a congressman from the state of Ohio, whose name I do not recall just now, who came and I spent several hours with him and subsequently made a trip on Sunday with him and his wife to the Smoky Mountains. So actually, in addition to my duties as Cost Engineer, I was asked to show many people around the site. I introduced Dave Lilienthal, the first General Manager, and the first Director of Information and many other people to the site itself.

CRAWFORD: By first General Manager, do you mean Jack Blandford?

JOHNSTON: That's right, yes.

CRAWFORD: What about your work as Cost Engineer? What was



that? What sort of assistance did you have?

JOHNSTON: Well, we had about five people in the cost engineering group at that time, and we coded the labor cards and coded invoices and all papers to direct the accounting people to charge these items to the correct accounts.

CRAWFORD: What about the quality of labor on the project? Were you satisfied with the employees you were able to get?

JOHNSTON: The employees as a whole were excellent. The quality of the crafts was perhaps lacking somewhat or a little bit maybe in some areas because there simply were relatively few people in the area with craft experience, and now of course a lot of these craftsmen were brought in from other areas. All the common labor and lower classes of labor were obtained from the local areas, and as a whole, all of them worked hard. There was little quibbling and little confusion, and I would say that on the whole the employees did an excellent job.

CRAWFORD: Your laborers were accustomed to hard work already, I'm sure.

JOHNSTON: They were, indeed, and what's more, they were hungry. And if you get a hungry man to work, he'll work



harder. He appreciates his job and knows what it means.

CRAWFORD: Were you able to keep on schedule with the construction of Norris Dam?

JOHNSTON: Yes, we did, although I was not there at the completion of the project, having been transferred away. The project actually was completed on time.

CRAWFORD: Did you have any difficulty when you were there maintaining this schedule?

JOHNSTON: Well, we had the usual difficulties such as floods, snowstorms, ice storms, and so forth, but on the whole we stayed right with it and fought it through.

CRAWFORD: Did you ever have trouble getting material delivered--getting it on time.

JOHNSTON: Very little. The vendors were also hungry, so when you gave a fellow an order he did his very best to deliver on time, and on the whole, if he promised it to you at a certain date it would be there.

CRAWFORD: What time did you leave the Norris Project, Mr. Johnston?



JOHNSTON: I left there May 1, 1935.

CRAWFORD: In what condition was the dam at that time?

JOHNSTON: Approximately 60 percent of the concrete had been poured, and I would assume that approximately 60 percent of the reservoir had been cleared. The powerhouse was just getting under way well, but it was coming along.

CRAWFORD: Did you have any contact with the TVA architects at this time?

JOHNSTON: I did not personally, but of course the architects were looking over the project and doing periodic inspections there.

CRAWFORD: I believe they had certain ideas in mind of how they wanted it to look when it was completed.

JOHNSTON: Yes, they did. For instance, the Norris powerhouse has a distinct design on the exterior from the method used in forming the concrete pours. The forms were lined with boards going either in vertical or horizontal directions, and this created a pattern on the finish of the concrete that's, to me, very desirable.

CRAWFORD: Do you know whose idea that was?



JOHNSTON: No, I really do not, but I believe Mr. Roland

Wank was the chief architect at that time. I'm not sure whether it was his idea, or it might have been Harry Tour or some of the other fellows. I just do not recall.

CRAWFORD: When you left Norris, what was your next assignment?

JOHNSTON: I went with the Project Planning Division of TVA in the division of general engineering and geology, and I supervised the core drilling of various dam sites on the main river. My first field job was at Chickamauga Dam site; the second I believe was Guntersville; the third perhaps Watts Bar, subsequently Fort Loudon; and then we drilled two or three sites which were actually alternates for Kentucky Dam itself. An independent group was set up there to do this drilling and considerable investigation other than drilling.







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CRAWFORD: Mr. Johnston, before we leave Norris altogether, can you tell something about living conditions there? I know you lived after it was completed in one of the dormitories there. What was life like in Norris? I know that was an unusual town, an unusual construction situation. What did people do, what did they think of it, and so forth?

JOHNSTON: Well, of course, in addition to the several dormitories, there were approximately 200 houses I believe--residences--and a few apartment buildings constructed, and of course entertainment was rather sparse. The people did meet for various things in the community building. There were square dances and checker games and perhaps ping pong, horseshoe pitching, those things that people could do with no outlay of money. And of course the people socialized among themselves by visiting from house to house, and they got along fine, not perhaps by our present day standards, but they thought they were doing



well.

I moved in September, 1934 into one of the apartment buildings with a gentleman who was the master mechanic at Norris Dam, and I stayed in this apartment until I left Norris May 1, 1935. We had little entertainment other than going to the community building or perhaps going into the town of Clinton to a picture show or even to Knoxville occasionally. Fortunately this gentleman owned one of the few private automobiles in Norris at the time. We did part of our cooking ourselves and we ate many meals at the cafeteria, but people, as I say, socialized by visitation primarily and by attending the gatherings at the community building.

CRAWFORD: Was this planned specifically by anyone, or did it just happen?

JOHNSTON: Well, it primarily just happened, but there was a recreation director there, of course, who directed the group activities around the community really. Not only the dormitory people but the people who lived in the apartments and the residences, used the facilities at the recreation center or the community building.

CRAWFORD: Were people at the Norris project well satisfied with the arrangements there?

JOHNSTON: As a whole, yes, they were. Of course, you heard



some grumblings, but sometimes that's an indication that things are fine. When people quit grumbling, you suspect something may be wrong.

CRAWFORD: How did this compare with other construction sites?

JOHNSTON: Well, I would say that it was one of the more forward ideas developed for construction projects at that time. Many construction projects in that era had practically no facilities for entertainment for their employees. Most of them had a company store which took care of most of the wages that the employees got. Of course, TVA was not interested in that. They did sell a few staple supplies--groceries--at the cafeteria building and a little bit later opened a somewhat general store in the town center, but all and all many of the people would go to one of the surrounding towns in either their own or some neighbors car and buy groceries, clothing and so forth. Incidentally, the school in Norris was started perhaps in the fall of 1934, and a non-denominational religious group was started there about that same time.

CRAWFORD: Norris was a different community from what you usually found around, certainly.

JOHNSTON: It certainly was. The houses were certainly above the normal for construction projects. In fact at that time they stacked up with the better construction in most



small towns.

CRAWFORD: Did you think at the time that something like this would be built at other construction sites?

JOHNSTON: Well, I personally wondered about it. Although, soon after the start of Norris--in fact, about December of 1933, construction at Wheeler Dam was started and in early spring of 1934 construction at Pickwick Dam was begun, and at both these locations similar villages were built.

CRAWFORD: But there were not made permanent. I wonder what the difference was.

JOHNSTON: Well, actually some of the houses at both those villages were built as permanent-type homes. They have since all been moved from Pickwick Village, but to my knowledge some of the permanent type homes at the Wheeler Dam village are still there and are operated as part of a state park by the state of Alabama, if I'm not mistaken. Other villages, such as Watts Bar and Kentucky and Fort Loudoun and at Elizabethton for the upper Holston project, have all been disposed of and some of them have been torn down. Of course, the houses at Elizabethton were sold to private owners. Those at Kentucky Dam were transferred to the state of Kentucky and are now operated as a park facility. The Watts Bar village,



part of it, is still being operated by private concessionaire under lease, I believe. Fontana Dam village is being operated by GSA, I believe. Houses at Hiwassee village are operated perhaps by the state of North Carolina Park Service, so there are several remnants of construction villages left throughout the valley as of this date.

CRAWFORD: Did you enjoy your service at the Norris site?

JOHNSTON: I did, indeed. It was a wonderful experience for me. I was privileged to meet many people who were eminent in their field, both engineering and construction and in various other fields, and I've since enjoyed their friendship and I learned much from them.

CRAWFORD: When you left Norris to go to the Chickamauga project, where did you live then?

JOHNSTON: Chattanooga. I lived in Chattanooga for approximately a year; then moved back to Knoxville.

CRAWFORD: What was your work at Chattanooga with the engineering and geological division?

JOHNSTON: This was supervising the exploration, primarily core drilling and test pits and so forth for the major dams on the Tennessee River. While still living at Chattanooga,



I had work going on at various times at Gunter'sville, Kentucky Dam, Watts Bar, Fort Loudoun, so forth, maintaining my residence at Chattanooga but commuting to those jobs perhaps weekly.

CRAWFORD: You usually spent the week out on the job?

JOHNSTON: Right.

CRAWFORD: Where did you stay? Did TVA supply facilities for you?

JOHNSTON: No, I had a room in a private residence and took my meals in restaurants in the city of Chattanooga.

CRAWFORD: Was your work the same at all of these sites?

JOHNSTON: Virtually so; at all of them we did core drilling, and incidentally this was done by contract from private drilling companies. We did in some instances--in fact most instances--we did some force account work with our own people. This consisted primarily of test pits and shafts and large core drilling. We drilled holes as large as thirty-six inches in diameter into rock at most of these sites, even prior to construction period, to allow the geologists and other personnel to actually inspect the foundation materials at the sites.



CRAWFORD: Did the geologists work there with you?

JOHNSTON: Yes, they did. Yes, we had a resident geologist at, I expect, each of the sites.

CRAWFORD: Did you find any unusual problems in your drilling?

JOHNSTON: Yes, we did. Most of the Tennessee River foundations are on limestone, and, of course, limestone is a soluble material, and at practically all the sites we encountered cavernous conditions in the rock, either filled cavities or, in many cases, open cavities containing only water. These cavities might extend throughout the first few feet of the parent rock, or they might go to considerable depths. Actually we've encountered cavities--I'm thinking on the Chickamauga site, for instance--we encountered cavities there that were at least 100 feet below the surface of the rock.

CRAWFORD: How do you deal with those problems?

JOHNSTON: Well, during the exploration period we dealt with them as best we could by either blasting out the rock, and if the cavities were near the surface we'd blast the top rock and drive a casing down to the next rock, or in some cases we would insert a flush-joint casing into the hole, going through the cavity area, then reduce the bit size and take a smaller core down as far as we wanted to go. Sometimes,



particularly in the larger hold drilling, which we did incidentally with steel shot rather than diamonds as a cutting medium, we might have to stop and grout the cavity, to refusal to cut the water off, and then we'd go on down farther. That was particularly true at the Fort Loudoun Dam site.

CRAWFORD: Was limestone common at all of these sites?

JOHNSTON: All the Tennessee River sites with the exception of Watts Bar are founded on limestone of some nature. Watts Bar is on a shale and sandstone foundation, and ironically the Watts Bar site was the toughest to drill from the standpoint of core recovery of all the sites. And yet from the standpoint of construction, it was perhaps the easiest site of all because there were few cavities encountered and the shale and sandstone formations are both relatively insoluble and presented little difficulty in foundation treatment.

CRAWFORD: Watts Bar was in the Cumberland Plateau area, wasn't it?

JOHNSTON: Watts Bar Dam is on the Tennessee River near Spring City, Tennessee. It's the second dam downstream from Knoxville on the Tennessee, the first being Fort Loudoun; the second Watts Bar; the third Chickamauga, and so forth.

CRAWFORD: Yes.



JOHNSTON: Between Fort Loudoun and Chickamauga.

CRAWFORD: I didn't know about your sandstone at that location.

JOHNSTON: Of course, the east Tennessee area is a sort of valley and ridge topography, as you know, and the entire area has been subjected to much folding and faulting throughout history. It just happens that this is one of the places where sandstone and shale were actually the foundation material--riverbed material.

CRAWFORD: Can you tell something about your leaving this work, Mr. Johnston, to take part in the steam plant building? I believe that occurred first in 1949 when you went to the Johnsonville Steam Plant.

JOHNSTON: Right. I had mentioned previously the 1939 to 1949 gap, during which time I was doing some dredging on the Tennessee River below the main dams. In 1949 TVA started a program of thermal electric generating stations, the first of which was Johnsonville, where construction was started in May, 1949. I was appointed Construction Superintendent for this project, and we began work there on an original installation of three units; subsequently a fourth unit was added, and still later the fifth and sixth units. This program carried me through until April 1953. In January, 1951 I was promoted from Construction Superintendent to Project Manager, in that my



predecessor as Project Manager, Mr. Frederick L. Weiss, was transferred to the Shawnee Steam Plant which was then starting in the vicinity of Paducah, Kentucky.

CRAWFORD: That was in 1951?

JOHNSTON: '51, yes. January, 1951. Prior to the start of that plant, a plant had been started at Widows Creek in northern Alabama near Bridgeport.

CRAWFORD: Where did you learn about steam plant work?

JOHNSTON: I learned it in TVA. As you have recognized, I grew up in TVA and so I acquired all my construction knowledge in TVA.

CRAWFORD: TVA became a pioneer in this sort of work, didn't it?

JOHNSTON: Right, they did. In fact, TVA pioneered most all the larger sizes of present day generating facilities. When we started Johnsonville in 1949, the largest units that were offered by domestic vendors were 125 megawatts. Most of the prototype, or the first units of subsequent larger sizes, were actually installed in TVA projects.

CRAWFORD: Was it TVA's demand then that helped this increase develop?



JOHNSTON: Yes, it was. Incidentally, many people thought at the end of World War II that TVA was over-installed generationwise, and that many of these plants could be shut down and virtually forgotten. At the end of 1945 the power load had exceeded the wartime peaks, and it has continued to grow steadily to this day.

CRAWFORD: Did you have any beliefs about that yourself during the wartime period--whether you would be overbuilt in peacetime or not?

JOHNSTON: Well, I rather suspected that some of the plants would be shut down, and of course I expected that they would subsequently come back into use because I felt that electric power demands would increase, but I certainly did not expect the tempo of growth that actually developed.

CRAWFORD: Did you anticipate that all the new plants would have to be built; that the demand would keep on increasing?

JOHNSTON: I personally did not. Of course, I was not in the planning game and did not study. I had no particular knowledge of the expected power growth. But in looking back, I can see that the people who were doing the power planning in TVA perhaps did anticipate a power growth somewhat in line with what we've actually experienced. Most people thought they



were very optimistic at that time, but it's actually turned out that they were pretty close to right.

CRAWFORD: Do you know when the first consideration started of using nuclear power?

JOHNSTON: Well, I couldn't actually pinpoint it, but I know that nuclear power has been talked about in TVA for several years, perhaps beginning in the early 1950s. As soon as nuclear energy was discovered or developed, people naturally started thinking of peaceful uses for nuclear energy and naturally, power generation came in for early consideration in this program.

CRAWFORD: In 1961, Mr. Johnston, you left all this sort of work and came to Knoxville at first as Assistant Chief Construction Engineer. Could you tell what happened then between 1961 and your retirement in 1965?

JOHNSTON: Well, as we have said, in coming to Knoxville I was transferred with the title of Assistant Chief Construction Engineer. I had been selected to replace Mr. Henry T. Lofft, who was then Chief Construction Engineer and whose retirement date was coming up at the end of April, 1961; hence I had the months of March and April with Mr. Lofft when I could learn the duties of the office. And the work of that position is the administrative supervision of all construction projects with the exception of transmission line and outlying substation



construction, which is done by the department of power. During my four and a half years, plus in this position we had under construction perhaps five steam plants, two dams, and three main river lock projects, in addition to maintenance work at various other projects, road building, bridges, so forth. The construction organization was of only medium size at that particular time. It has since then enlarged considerably, and of course, it had been much larger during previous periods.

CRAWFORD: Did you have a Chief Project Engineer at each of these sites?

JOHNSTON: Yes, we did. Our top man was called Project Manager at each of these sites. Of course, he had his Construction Engineer and Construction Superintendent and various people on down the line.

CRAWFORD: Did you travel to these projects?

JOHNSTON: Periodically, yes. I got around to them just as often as my duties would permit. Unfortunately, it seemed as time went by we got involved in more and more main office work, meetings, conferences, so forth, but I did visit all these projects as often as possible. We had work going on during that time all the way from Paradise Steam Plant in western Kentucky to work at Fontana Dam in North Carolina and the many places in between.



CRAWFORD: Were any of these projects ones that gave you particular difficulty?

JOHNSTON: Well, of course, we had the usual difficulties at most of them. We encountered considerable labor difficulties particularly at the Paradise Steam Plant. As you know, Paradise Plant is located on the Greene River in northwestern Kentucky, and that area is out of the usual TVA construction areas. And the people in that area were not accustomed to working under TVA conditions and particularly under the so-called general agreement between the trades and labor organizations and TVA. Hence, we had several work stoppages actually at that plant. This is not to say that we did not have work stoppages and difficulties at our other projects, but they were certainly less frequent than at the Paradise Plant.

CRAWFORD: Did you notice any changes in construction projects from the time you started until the 1960s--any changes in labor or any changes of any nature at all?

JOHNSTON: Well, yes there were definitely changes in work programs. At the very beginning of TVA, of course, the unions did not participate in the planning or the work of TVA. This is not to say that some of the workers did not belong to unions; they certainly did. But it was perhaps in late 1934 or maybe even 1935 that TVA started dealing officially with the



unions. They formed what is known as the Tennessee Valley Trades and Labor Council, and the international representative of the various craft unions banded together to bargain with TVA on rates and working conditions, and that program continues to this day.

CRAWFORD: Did the construction program of TVA level off to some degree in the 1960's? Were you doing less work than you had been before?

JOHNSTON: Yes, it did actually. And, incidentally, that's one of the reasons I left TVA. There was a period in the mid-sixties, namely 1964 and '65, when our work volume was on the downgrade and for a very short period at least we were somewhat pressed to take care of key personnel, people that we anticipated would be needed during future work. And actually that's one of the reasons that I took early retirement from TVA to save at least one job for a key person. There are other reasons for my leaving, but that actually is one of them.

CRAWFORD: Was there any change in your work when the title Chief Construction Engineer was changed to Director of Construction?

JOHNSTON: No, that was strictly an organizational change--or an administrative change rather. The work continued



with no change whatever.

CRAWFORD: Did you notice any changes in the type of construction projects occurring by the time you left TVA? I know you were beginning to get to the point of nuclear construction. Did you foresee the building of many more steam plants?

JOHNSTON: Yes, I did. The power planners in the Department of Power have said that they could foresee a demand growth for approximately 10 percent per year just as far as they cared to forecast, so when you think of the power load compounding at 10 percent per year you'll soon get into tremendous construction projects and actually that has happened.

CRAWFORD: And you had really no opportunities for more hydro projects, I suppose, in the valley--or very few.

JOHNSTON: Actually most all the economical hydro sites in the valley had been developed prior to my leaving TVA. Since my leaving, one small project, the Timms-Ford Dam on the Elk River has been constructed and they are now talking of small dams on the Duck River and perhaps more on the Elk River. But virtually the entire potential of the Tennessee River is already developed power-wise.



CRAWFORD: What was the most satisfying project personally that you worked on in your experience with TVA?

JOHNSTON: That would be extremely hard to say. I would suppose that perhaps Norris because that's when I was young and certainly was learning more and being exposed to more new work and more new people than in any other period of my life and that perhaps was the most enjoyable.

CRAWFORD: Thank you very much, Mr. Johnston.











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